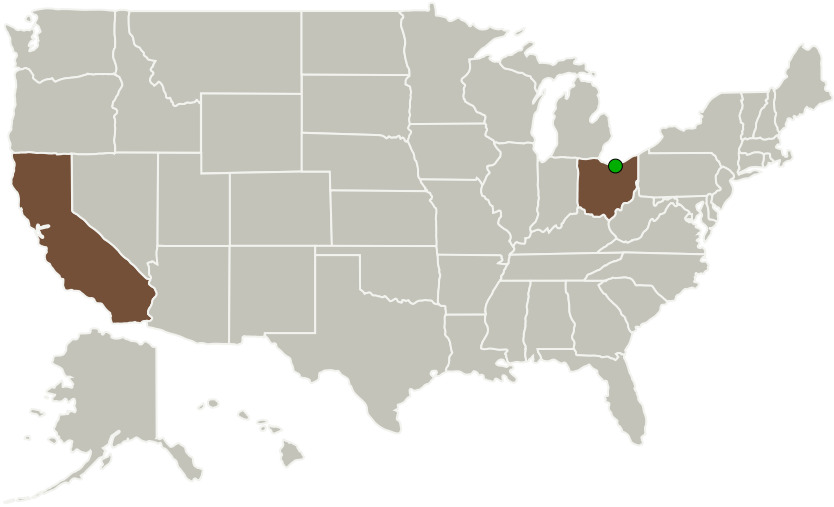
# Modular Ultra-High Power Solar Array Architecture, Phase I

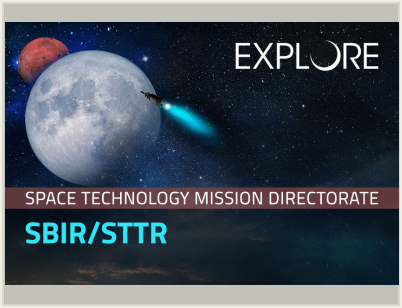
Completed Technology Project (2011 - 2011)

## Project Introduction

Deployable Space Systems, Inc. (DSS) will focus the proposed SBIR program on the development of a new highly-modularized and extremely-scalable solar array that provides immense power level range capability from 100kW to many Megawatts in size. The proposed ultra-high power solar array will enable extremely high power spacecraft, space-tug, power station applications, and large-scale Planetary and Lunar surface missions. The proposed technology's broad power level scalability is achieved while still retaining industry leading solar array performance metrics and mission enabling features for lightweight, high performance, compact stowage volume, and affordability. The proposed technology will enable future ultra-high power missions through low cost (25-50% cost savings depending on PV and blanket technology), lightweight, high specific power (>200 W/kg to 500 W/kg BOL at the wing level depending on PV and blanket technology), compact stowage volume (>80 kW/m3 for very large arrays), reliability, platform simplicity, high deployed strength/stiffness (10X stiffer and stronger than rigid panel arrays), radiation hardness, high voltage operation capability, scalability to ultra-high power (100kW to beyond Megawatts), and operability in unique environments (high/low illumination and high/low sun intensity).

## Primary U.S. Work Locations and Key Partners



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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Deployable Space Systems, Inc(DSS) | Lead Organization | Industry | Goleta, California |
| Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |

| Primary U.S. Work Locations | |
|---|---|
| California | Ohio |

## Project Transitions

**February 2011:** Project Start

**September 2011:** Closed out

**Closeout Documentation:**

- Final Summary Chart*(https://techport.nasa.gov/file/140237)*

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Deployable Space Systems, Inc (DSS)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Brian R Spence

**Co-Investigator:**

Brian Spence

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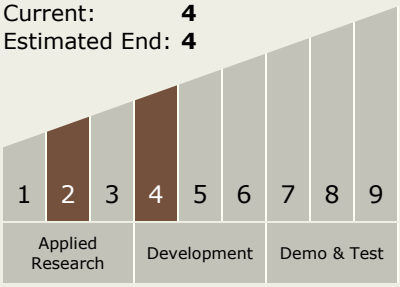
## Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**




## Technology Areas

**Primary:**

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System